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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/548,913	04/13/2000	Brian Mitchell Bass	RAL9-00-0018	7379

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EXAMINER	
SHAH, NILESH R	

ART UNIT	PAPER NUMBER
2127	9

DATE MAILED: 01/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/548,913	BASS ET AL.	
	Examin r	Art Unit	
	Nilesh R Shah	2127	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/6/03*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 5-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 5-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 April 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Anderson (5,465,335).

As per claim 2, Anderson teaches a method of placing data flows into a queue for service in turn comprising:

determining whether a queue had a previous position in the a calendar (col. 4 lines 6-64 and col. 12 lines 7-45) ('The TCB at the "head" of CPU Queue 20 retains possession of microprocessor 10 for that task.');

if the queue had a previous position in the calendar, determining whether a new position which would be assigned to it is earlier than a previous calculated new position in the calendar (col. 4 lines 6-64 and col. 12 lines 7-45) ('If a task of higher priority is placed in the queue, the currently running task is replaced by the higher priority task at the head of CPU Queue 20 and the task of higher priority executes.').

if the new position which would be assigned is better than the previous position, using the previous position (col. 4 lines 6-64 and col. 12 lines 7-45) ('If a task of higher priority is placed in the queue, the currently running task is replaced by the higher priority task at the head of CPU Queue 20 and the task of higher priority executes.');

if the previous position is not better than the position which would be assigned, using the position which would be assigned (col. 4 lines 6-64 and col. 12 lines 7-45). Anderson's TCB value is associated with the priority level and status of a task. It is equivalent that the priority level of the tasks that is located in the TCB and is sent to the CPU queue is considered queue or a calendar. Claim 2 is rejected.

As per claim 7, Anderson teaches a method wherein using includes attaching the queue to the selected location (col. 4 lines 6-64 and col. 12 lines 7-45) ('If a task of higher priority is placed in the queue, the currently running task is replaced by the higher priority task at the head of CPU Queue 20 and the task of higher priority executes.');

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (5,465,335).

As per claim 3, Anderson teaches a method including considering the aging of the queue to determine whether the stored parameters remain valid (col. 4 lines 6-64 and col. 12 lines 7-45). The TCB value is latched onto the schedule register. It is obvious that the TCP must be within a valid parameter. For example if the value is unrecognizable by the computer it will not know where in the queue to place the task. Claim 3 is rejected.

Claims 1, 5 –6, 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blelloch et al (5,768,594) (hereinafter Blelloch) further in view of Anderson (5,465,335) and in further view applicant's admitted prior art, pages 1-9.

As per claim 1, Blelloch teaches a system for periodically moving information units from a plurality of sources to an output destination based on information stored about each of the plurality of sources, the system comprising (fig, 1,col. 3 line 20-50, col. 6 lines 30-67) ('sequential scheduler that designates each task of a program with a code or characterization that identifies the ordering of the task in the sequence of instructions. Thus each task has a designation identifying its order in the schedule.')

a time-based calendar which handles some of the information units based on the information stored about the plurality of sources (col. 4 lines 30-44, col. 6 lines 30-67) ('Here, in step 650, the assignment manager AM1 designates a limit L on the number N of selected tasks, on the basis of memory available at any time for a group of tasks, and memory available for the bookkeeping for this group of tasks.'); (col. 16 lines 7-24). ('Therefore, when the header of the list (at that particular time) is scheduled, it checks whether the list becomes empty. If it does, then it remains in array "Active", and hence placed in "P-Ready". Otherwise, the next unscheduled node in the list will become the header of the list, and the scheduled header is removed from the data structure. Note that each node from the list that is scheduled and is not the list header is promptly removed from the data structure.')

a time-independent calendar which handles other of the information units based on information stored about the plurality of sources and which places each source into a calendar location and which moves the source to a different place in the calendar after servicing the source (col. 3 line 5-50, col. 6 lines 30-67). ('The invention achieves reduced parallel-processing memory requirements by selecting a subset of available tasks for parallel processing and assigning higher priorities to the earlier available tasks in the sequential schedule.') ('In the preferred embodiment, a processor reads and writes certain locations in the memory elements ME1 residing in other processing elements PE1 by communicating via the router RT1. The task buffer TB1 can reside within the memory element ME1 or form a separate memory device.') Blelloch does not specifically teach the use of how a queue flow works.

Anderson teaches a mechanism for determining when a flow is added to the time-based queue whether that flow has had a place in the time-based queue and preventing the flow from achieving a better place in the time-based queue as a result of disconnecting and reconnecting (col. 4 lines 6-64 and col. 12 lines 7-45). ('PU queue 20 has now been modified so that the TCB name of the task to be scheduled is present in CPU queue 20 in its proper priority position. Microprocessor 10, to determine what is now the highest-priority task awaiting execution, reads the Active TCB register from command and status registers 14. Microprocessor 10 may also read the Event case register. The access by microprocessor 10 to the Active TCB register causes queue state machine 16 to read the TCB name from the first queue element (highest priority) in CPU queue 20 and to place this value onto microprocessor data lines DATA') It would have been obvious to add the teachings of Anderson to Blelloch in order for tasks of higher priority to be placed higher in the queue than lower priority tasks. Anderson's TCB value is associated with the priority level and status of a task. As per page 7 of the applicant's specification, it states a weighted priority technique is implemented in the form of a round robin. It talks about how tasks of the highest priority are processed first and how a task of a lower priority may not exceed the priority level assigned. The switch between different queues is considered the disconnecting and reconnecting. One would want to include this system of preventing a change of priority level between different tasks to ensure fairness between different tasks and queues. Claim1 is rejected.

As per claim 5 Anderson, teaches a system wherein the plurality of sources include a plurality of queues (col. 4 lines 6-64 and col. 12 lines 7-45). ('PU queue 20 has now been modified so that

the TCB name of the task to be scheduled is present in CPU queue 20 in its proper priority position. Microprocessor 10, to determine what is now the highest-priority task awaiting execution, reads the Active TCB register from command and status registers 14. Microprocessor 10 may also read the Event case register. The access by microprocessor 10 to the Active TCB register causes queue state machine 16 to read the TCB name from the first queue element (highest priority) in CPU queue 20 and to place this value onto microprocessor data lines DATA').

As per claim 6, Blelloch teaches a system wherein the calculated location includes the location whereat the queue would have been attached upstream from the location whereat said queue was last serviced (col. 3 line 5-50, col. 6 lines 30-67). ('The invention achieves reduced parallel-processing memory requirements by selecting a subset of available tasks for parallel processing and assigning higher priorities to the earlier available tasks in the sequential schedule.') ('In the preferred embodiment, a processor reads and writes certain locations in the memory elements ME1 residing in other processing elements PE1 by communicating via the router RT1. The task buffer TB1 can reside within the memory element ME1 or form a separate memory device.').

As per claim 8, Blelloch teaches a method wherein the stored parameter includes time stamps (col. 16 lines 7-24). ('Therefore, when the header of the list (at that particular time) is scheduled, it checks whether the list becomes empty. If it does, then it remains in array "Active", and hence placed in "P-Ready". Otherwise, the next unscheduled node in the list will

become the header of the list, and the scheduled header is removed from the data structure. Note that each node from the list that is scheduled and is not the list header is promptly removed from the data structure.')

As per claim 9, Blelloch teaches a system comprising:

a time-based calendar which handles some of a plurality of information units based on the information stored about a plurality of sources (col. 3 line 5-50, col. 6 lines 30-67). ('The invention achieves reduced parallel-processing memory requirements by selecting a subset of available tasks for parallel processing and assigning higher priorities to the earlier available tasks in the sequential schedule.'); and

a mechanism for determining when a flow is added to a source whether that source was at a location in the time-based calendar and preventing the source from being placed at a location ahead of a predefined location in the time-based calendar (col. 16 lines 7-24) ('When the list will become empty, the sink node "sinkv" will be ready for scheduling. Therefore, when the header of the list (at that particular time) is scheduled, it checks whether the list becomes empty. If it does, then it remains in array "Active", and hence placed in "P-Ready". Otherwise, the next unscheduled node in the list will become the header of the list, and the scheduled header is removed from the data structure. Note that each node from the list that is scheduled and is not the list header is promptly removed from the data structure.') Blelloch does not specifically teach the use of how a queue flow works.

Anderson teaches a mechanism for determining when a flow is added to the time-based queue whether that flow has had a place in the time-based queue and preventing the flow from achieving a better place in the time-based queue as a result of disconnecting and reconnecting (col. 4 lines 6-64 and col. 12 lines 7-45). ('PU queue 20 has now been modified so that the TCB name of the task to be scheduled is present in CPU queue 20 in its proper priority position. Microprocessor 10, to determine what is now the highest-priority task awaiting execution, reads the Active TCB register from command and status registers 14. Microprocessor 10 may also read the Event case register. The access by microprocessor 10 to the Active TCB register causes queue state machine 16 to read the TCB name from the first queue element (highest priority) in CPU queue 20 and to place this value onto microprocessor data lines DATA') It would have been obvious to add the teachings of Anderson to Blelloch in order for tasks of higher priority to be placed higher in the queue than lower priority tasks. Anderson's TCB value is associated with the priority level and status of a task. As per page 7 of the applicant's specification, it states a weighted priority technique is implemented in the form of a round robin. It talks about how tasks of the highest priority are processed first and how a task of a lower priority may not exceed the priority level assigned. The switch between different queues is considered the disconnecting and reconnecting. One would want to include this system of preventing a change of priority level between different tasks to ensure fairness between different tasks and queues

As per claim 10, Blelloch a method comprising:

providing at least one time based calendar having a plurality of locations and a time pointer moving relative to the plurality of locations as a result of scheduler ticks and attaching a queue to

a first calendar location whereat the time pointer is pointing, servicing said queue by causing a frame to be transmitted from said queue whereupon said queue goes empty; (col. 16 lines 7-24). ('Therefore, when the header of the list (at that particular time) is scheduled, it checks whether the list becomes empty. If it does, then it remains in array "Active", and hence placed in "P-Ready". Otherwise, the next unscheduled node in the list will become the header of the list, and the scheduled header is removed from the data structure. Note that each node from the list that is scheduled and is not the list header is promptly removed from the data structure.')

identifying a second location whereat the queue would have been re-attached had it not gone empty, examining pre-defined characteristics associated with said queue to determine occupancy frames within said queue, if examination indicates the queue is not empty, identifying a current location whereat the time pointer points correlating the current location of the time pointer and the second location; and selecting a location which is not earlier than the second location (col. 16 lines 7-24) ('When the list will become empty, the sink node "sinkv" will be ready for scheduling. Therefore, when the header of the list (at that particular time) is scheduled, it checks whether the list becomes empty. If it does, then it remains in array "Active", and hence placed in "P-Ready". Otherwise, the next unscheduled node in the list will become the header of the list, and the scheduled header is removed from the data structure. Note that each node from the list that is scheduled and is not the list header is promptly removed from the data structure.')

Blelloch does not specifically teach the use of how a queue flow works.

Anderson teaches a mechanism for determining when a flow is added to the time-based queue whether that flow has had a place in the time-based queue and preventing the flow from achieving a better place in the time-based queue as a result of disconnecting and reconnecting (col. 4 lines 6-64 and col. 12 lines 7-45). ('PU queue 20 has now been modified so that the TCB

name of the task to be scheduled is present in CPU queue 20 in its proper priority position. Microprocessor 10, to determine what is now the highest-priority task awaiting execution, reads the Active TCB register from command and status registers 14. Microprocessor 10 may also read the Event case register. The access by microprocessor 10 to the Active TCB register causes queue state machine 16 to read the TCB name from the first queue element (highest priority) in CPU queue 20 and to place this value onto microprocessor data lines DATA') It would have been obvious to add the teachings of Anderson to Blelloch in order for tasks of higher priority to be placed higher in the queue than lower priority tasks. Anderson's TCB value is associated with the priority level and status of a task. As per page 7 of the applicant's specification, it states a weighted priority technique is implemented in the form of a round robin. It talks about how tasks of the highest priority are processed first and how a task of a lower priority may not exceed the priority level assigned. The switch between different queues is considered the disconnecting and reconnecting. One would want to include this system of preventing a change of priority level between different tasks to ensure fairness between different tasks and queues

As per claim 11, Blelloch, teaches a method wherein the not emptied queue is attached to the selected location (col. 16 lines 7-24) ('When the list will become empty, the sink node "sinkv" will be ready for scheduling. Therefore, when the header of the list (at that particular time) is scheduled, it checks whether the list becomes empty. If it does, then it remains in array "Active", and hence placed in "P-Ready". Otherwise, the next unscheduled node in the list will become the header of the list, and the scheduled header is removed from the data structure. Note

that each node from the list that is scheduled and is not the list header is promptly removed from the data structure.')

As per claim 12, Blelloch teaches a method wherein the queue is attached by writing the i.d. of said queue in a stack located at each location (col. 3 lines 38-65) ('Sequential programs intended for use with a single processor usually employ a sequential scheduler that designates each task of a program with a code or characterization that identifies the ordering of the task in the sequence of instructions. Thus each task has a designation identifying its order in the schedule.')

As per claim 13, Blelloch teaches a method wherein the stack is a Last In First Out (LIFO) stack (col 3 line 50-col. 4 line 18) ('Details of step 514 appear in FIG. 6. Here, in step 604, the assignment manager AM1 assigns priorities to the tasks available for scheduling according to an ordering that is determined by a particular sequential scheduler of all the tasks in the program, pre-selected at the start of the method. The scheduler is of a known type such as a 1DFT (depth first traversal) scheduler. Depth first traversed schedulers are discussed below under "Theory".')

Conclusion

Arguments made by Applicant are nonpersuasive and applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nilesh R Shah whose telephone number is 703-305-8105. The examiner can normally be reached on Monday-Friday 8am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Grant can be reached on 703-308-1108. The fax phone number for the organization where this application or proceeding is assigned is (703)305-0040.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

NS
January 7, 2004

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